



Cadastral Framework Standards

The goal of the Data Standards and Recommendations Committee is to provide recommendations and guidelines to Indiana GIS user communities to facilitate the collection, maintenance and analysis of GIS data; and, to communicate existing federal, state and local data standards. The Data Standards and Recommendation Committee will not recommend software, hardware or operating systems. Furthermore, the Data Standards and Recommendation Committee will not impose any of these recommendations and guidelines as a requirement on any GIS user community

What is Cadastral Data and why do we need standards?

GIS cadastral data is the compilation of land records information into a continuous map of a jurisdiction, typically a county. Land records information is gathered from existing property maps, original subdivision plats, legal land descriptions, road right-of-way maps, and other reliable sources. Cadastral data is usually created to support property taxation purposes and is typically integrated with property ownership records.

Standards are important for effective communication, integration and sharing of data. These framework standards provide sufficient information to support integrating basic land parcel information across jurisdictional boundaries and answering fundamental questions for business processes that need cadastral information.

What is the basis for these Cadastral Framework Standards?

The Cadastral Sub-Committee of the Federal Geodetic Data Committee has adopted a set of “framework” standards called “Cadastral Core Data” for publication and distribution of cadastral information by cadastral producers and distributors. The Standards and Recommendations Committee of the Indiana Geographic Information Council has adapted and expanded on this standard to use as the basis for its cadastral framework standards for Indiana

How are the Cadastral Framework Standards organized?

These cadastral framework standards are presented in four parts. The data considered “Core” are divided into two categories – “*Core Geometry*” and “*Core Attributes*.” Core Geometry is comprised of fields considered necessary to uniquely define and reflect the spatial orientation and location of a parcel. Core Attributes are those minimum attribute data considered necessary to adequately document a parcel in a GIS system. The standard also includes “Core Plus” options, and a table of suggested field types and sizes for the Core and Core Plus attribute fields.

What are Core Plus Standards?

In its framework standards, the FGDC Sub-Committee offered what it termed optional “*Core Plus*” attributes for parcels. This concept has also been used in this Indiana standard. Core Plus attributes are those attributes that a cadastral producer or distributor may deem desirable for inclusion as part of the cadastral information, but are not considered necessary. The Core Plus attributes in the Indiana standard are Owner-related, Improvement and Assessment/Value Information.

What are the critical issues when considering Cadastral Standards?

When considering cadastral standards, it is especially important to recognize the following:

- Cadastral map content should be detailed and complete
- Cadastral map data should be compiled and constructed using coordinate geometry and precision placement techniques whenever possible
- Attributes are as important as spatial information when used to support business decisions
- Careful consideration must be given to how cadastral data will be improved upon and updated over time
- Care should be taken to respect the privacy policies of the jurisdiction dealing with cadastral attribute information.

What other information should be considered before starting to build a Cadastre?

Spatial Reference: This is the geodetic and geographic control necessary to reference parcel information to a real world coordinate system. Spatial reference begins with a geodetic network system that can be densified with a High Accuracy Reference Network (HARN) and then further extended to base maps and orthophotography. Typically in Indiana, cadastral GIS data is referenced to the Indiana State Plane Coordinate System, East Zone or West Zone.

The National Geodetic Reference System (NGRS): The National Geodetic Survey manages and coordinates the NGRS to provide for a uniform and consistent definition of coordinate system, horizontal and vertical datums and monumented points throughout the country.

Orthophotography: Orthophotography should be tied to the NGRS and have a resolution of one or two foot pixels for rural areas and 6 inch pixels or smaller for subdivided or urban areas. The orthophotography should be generated from aerial photography flown at an appropriate altitude to support the mapping of cadastral details for rural and urban areas and meet published specifications (ASPRS, USGS, FGDC). Orthophotography should be updated at a frequency of 2 to 5 years as appropriate for growth and development of the mapped area.

Hydrography: Sufficient hydrography to support the definition of cadastral features is necessary. This will normally include meanderable bodies of water, named bodies of water, and water features that otherwise form parcel boundaries.

Recommendation

Following are the Indiana framework standards for cadastral data. Within the Core and Core Plus categories, the data have been organized into 3 groups: Spatial reference, Cadastral Reference and Parcels.

Core Geometry

1. **Cadastral Reference.** This is the information necessary to fit the parcel information into a continuous and related fabric. In Indiana, the Public Land Survey System (PLSS) is a key component of cadastral reference, although there are other reference systems that form a hierarchy for nesting parcel information. The natural nesting of legal descriptions from public land sections to subdivision perimeters to blocks and lots form this cadastral reference.
 - A. **Corners of Common Usage.** These are corners or reference points that are used extensively by land surveyors to generate legal descriptions and conduct surveys. These might be points of commencement, corners common to several land divisions, or corners of the Public Land Survey System. Corners of the PLSS include section and quarter section corners, but also include corners of aliquot subdivisions of sections and quarter sections, such as half-quarter sections and quarter-quarter sections. In addition, corners of common usage may include road intersections, control monuments, corners of municipal boundaries and other corners that are commonly used as starting points for legal

descriptions. Each jurisdiction that collects and maintains cadastral information needs to identify what it considers to be corners of common usage within its jurisdiction. Generally such corners should be at one half to one mile spacing in rural areas and block-by-block up to one half mile spacing in urban areas.

The Committee recognizes that, notwithstanding Indiana statute law regarding the perpetuation of the original public land survey corners, there is a wide variation across Indiana counties as to the extent and integrity of documented public land corners, and the associated contemporary records (i.e. "corner ties"). Where such corners are documented and have a reputation for integrity, they should be utilized as corners of common usage. Where such corners are undocumented and their locations unknown or where the documented locations do not have a history of integrity, public land corners as identified on digital quadrangle maps may be used in the interim until such time as the true corner locations can be identified, documented and coordinated.

B. Grid or Cell Reference System. This is the primary division of parcels used for parcel mapping and parcel reference. In most parts of Indiana, the sections, townships and ranges of the PLSS form the grid or cell reference system for mapping and legal descriptions in suburban and rural areas. Within this system, and generally in urban areas, platted subdivisions may be a sub-set. Within the State there are other lands which were not surveyed as part of the Public Land Survey System such as the Vincennes Tract, Clark's Grant, the Michigan Roads Lands, Reserves and Indian Grants which must be included in the cadastre. Each jurisdiction must define its system and include a description of it within its metadata. The system must uniquely cover all of the real estate in the jurisdiction. Reference is made to Indiana Code Title 32, Article 19, Chapters 1 through 4 for information on the Indiana State Plane Coordinate System.

C. Significant Cadastral Reference Features. These are areas and features that define the primary levels of nested legal descriptions. Examples include the perimeters of subdivisions and the boundaries of large public land holdings. While these features may not cover the entire jurisdiction, they provide for important landmarks in understanding and using parcel information.

2. Parcels. Once the reference systems have been established, this forms the core information about parcels. The core elements should be extensive enough to support public and private business processes

and allow for the integration of cadastral information across jurisdictions.

A. Parcel Outlines (polygons). This is the geographic extent of the parcel; the parcel boundaries form a closed polygon. The collection of individual parcel outlines forms the parcel map.

B. Parcel Centroid. This is a point, not necessarily the *geometric* centroid of the parcel, within the parcel that can be used to attach related information. The parcel centroid also gives a general point location of the parcel.

3. Other Cadastral Content. In addition to geographic townships, sections, parcels, subdivision boundaries, subdivision lots, water features, a complete and detailed cadastre typically includes, but is not limited to, the following content:

- Parcel dimensions and acreages
- Lot dimensions
- Subdivision names and block numbers
- Political boundaries such as county and municipal
- Public streets, roads, highway rights-of-way and centerlines
- Railroad rights-of-way and centerlines

Core Attributes

Core attributes are best maintained at their point of origin within county records systems other than the GIS to avoid duplication. Core attributes can be linked to the GIS via the Parcel ID number.

1. Parcel ID. A unique parcel identifier as defined by each jurisdiction, preferably using the standard defined by the Department of Local Government Finance (DLGF). It must be unique across the jurisdiction. In Indiana, the DLGF standard (See 50 IAC 12-15-1) for the parcel identifier is structured as

XX-XX-XX-XXX-XXX.XXX-XXX

The digits indicated reference the following:

- (1) The first “xx” digits reference the county;
- (2) The second “xx” digits reference the geographical township/area number,
- (3) The third “xx” digits reference the section number assigned under the United States public lands survey;
- (4) The fourth “xxx” digits reference block numbers in urban areas (if no block number is necessary they are all zeros);

- (5) The fifth “xxx.xxx” digits reference the permanent parcel number assigned to identify each parcel, allowing for parent number and split code; and
 - (6) The last “xxx” digits reference the taxing district in which the parcel is located as assigned by the DLGF (if it is only a two (2) digit number the first digit is a zero (0)).
2. **Parcel Address.** The street address for the parcel as defined by the local jurisdiction which typically resides in the county tax system.
 3. **Geometry Source Reference.** A record in the County Recorder’s document system (e.g. a deed or subdivision plat) or a reference to a record in the Recorder’s or other county office that describes the geometric source reference for the parcel. It may be a document (instrument) number, a volume and page or a map or survey. The geometry source reference should describe the source of the parcel geometry, either the parcel centroid or the parcel outline.
 4. **Geometry Source Reference Date.** The date of the Geometry Source Reference document. This also provides a general indication of the currency of the parcel geometry.

Core Plus Attributes

Core Plus Attributes are typically available to the GIS through system integration with a county’s tax system and/or computer-aided mass appraisal system (CAMA). While there are many databases with attributes that can be integrated with a GIS, typical Core Plus Attributes include:

1. **Owner Name.** The Owner(s) according to the Owner Source Reference document.
2. **Owner Source Reference.** The record in the County Recorder’s system (e.g. deed), Auditor’s tax system, or a reference to a record in the Recorder’s or Auditor’s office that describes the source reference for the parcel’s current owner(s) of record. This may or may not be the same as the Geometry Source Reference.
3. **Owner Source Reference Date.** The date of the Owner Source Reference document. This also provides a general indication of the currency of the parcel ownership records.
4. **Assessment/Value Information.** This will generally include Land Value, Improvements Value and Total Value. It may also include secondary building values if it is not otherwise captured in the Total Value.

5. **Owner Type.** The Owner Type is the classification of owner. This attribute is important for the integrity of county cadastre even in the case of non-taxed properties. The initial domain of values for this attribute include:
- A. Federal
 - B. State
 - C. County
 - D. Local/Municipal
 - 1. Private
 - 2. Not-for-Profit
 - 3. Other
 - 4. Unknown